

# W5YI

Nation's Oldest Ham Radio Newsletter

## REPORT

Up to the minute news from the world of amateur radio, personal computing and emerging electronics. While no guarantee is made, information is from sources we believe to be reliable. May be reproduced providing credit is given to The W5YI Report.

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### ★ In This Issue ★

**1992 Amateur Radio Year in Review**  
**Ham Radio Growth Continues!**  
**Changes to Business Rule Coming**  
**Folding Novice into VEC System**  
**Licensing of Foreign Visiting Hams**  
**HF Packet Dispute Settled**  
**New Privileges Proposed for Novice**  
**October VE Program Statistics**  
**Telecommunications Technology**  
**Wording of New 1992 Scanner Law**  
**News from Peoples Republic/China**  
**Amateur has \$2,000 Fine Reduced!**  
**FCC Chairman to Step Down Jan. 19.**  
**...and much, much more!**

Vol. 15, Issue #1

\$1.50

PUBLISHED TWICE A MONTH

January 1, 1993

## THE 1992 AMATEUR RADIO YEAR IN REVIEW

Every year about this time we pause to reflect on the Amateur Radio happenings of the past year. Ham radio never stays the same - and 1992 was no exception! Here are what we feel are the major ham radio stories of the year.

### Ham radio grows!

Perhaps the biggest story of 1992 is the continued success of the Code-free Technician Class ham ticket. The number of Technician Class amateurs continues to surge! Today, one-third of all amateur radio operators are Technicians. Just two years ago Technicians accounted for one in every four ham operators; five years ago it was one in five! There are now twice as many Technicians as Novices. Just ten years ago there were more Novices. Times are certainly changing.

Everyone remembers what happened five years ago with "Novice Enhancement." The FCC's objective in this 1987 proceeding was to strengthen sagging interest in ham radio by giving beginners a sampling of voice operation. But they still had to learn the Morse code and Novice Enhancement simply did not work out. The big question in code-free hamming was would interest wear off after the first influx of new operators... just as it did with Novice Enhancement.

The first No-Code Tech license was issued on March 1991 and everyone wondered if the figures would drop off after the first year. Well, the

statistics are in and the good news is that in 1992, interest in code-free hamming is indeed continuing.

As of November 1, 1992 (the latest month for which we have FCC licensing figures) there are 188,749 Technician class operators. While the total number of licensees has increased by a third over the last five years, the Technician class has more than doubled. There can be no doubt that new Techs are accounting for the growth and renewed interest in ham radio!

More than 42,000 people became amateur radio operators during 1991 - a whopping increase of more than 50% over 1990. About 48,000 will join the hobby for the first time in 1992. There can be no doubt that the Codeless Technician Class is the path of choice. The number of new Novices is now declining dramatically. Many beginners are indeed learning the Morse code and upgrading their privileges, but they are doing it after entering at the code-free Tech level.

The total amateur census stood at 500 thousand in January 1991 and increased to 543 thousand by year end - a gain of 8.6%. The amount of Technicians, however, jumped by 25% as the number of Novices actually decreased. The number of ham operators now stands at slightly more than 582 thousand (November 1, 1992 statistics) or 7% more than December 1991. And again, the gain was accounted for by the Technician class which grew by another 20%.



While ham radio growth is being provided by the new Codeless Technician Class, no-coders are apparently not rushing to join the American Radio Relay League. The ARRL retained a professional survey researcher during 1992 to determine the League's image within the amateur community and what services should be added to interest newcomers.

There can be no doubt that the existence of the Codeless Technician Class has had a profound impact on the Novice Class. Certainly more than the amateur community expected! The FCC earlier believed that the Novice Class would be far less popular than VHF code-free entry ...and therefore possibly unnecessary. Frankly, it appears that the FCC's initial strategy was the right one.

Comments filed on the No-Code proceeding a couple of years ago said that the Novice and any code-free entry level would be about equal in popularity. It certainly has not worked out that way! Three-fourths of all first time amateur radio licensees in 1992 were Technicians. And the Novice Class continues to decline to the point where less than half as many Novice tickets were issued in 1992 as in 1990.

We were at first sort of alarmed by the reduced number of new amateur operators during September and October 1992. These two months represent the least number of newcomers for any two month period since the beginning of code-free hamming. We have found out since, however, that the FCC has a huge backlog (around 9,000) Form 610 applications awaiting license issuance.

On December 16, the FCC in Gettysburg, Pennsylvania, acknowledged the backlog and sent a letter to all VEC's requesting they advise applicants that they "...should not inquire on the status of their application until it has been pending more than 90 days with the Commission. The 90 days does not include the VE or VEC processing/mailling time. VECs may wish to use 120 days as the approximate time it takes to receive a license from the date of the test to date license is received. Efforts are continuing to reduce the processing time." The letter was written by Larry Weikert for Marcus D. Stevens, Chief, Special Services Branch.

Here are the new amateur radio operator licensing figures over the past three years:

## NEWCOMERS TO THE AMATEUR RADIO SERVICE 1990 - 1992

1990	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total	Percent
Nov.	2434	1679	2466	2368	3875	1724	1665	893	1382	1457	1498	2957	24398	88.0%
Tech.	191	219	205	239	359	214	269	158	128	283	182	260	2707	9.8%
Other	46	43	56	51	50	46	69	38	42	86	66	42	635	2.2%
Total:	2671	1941	2727	2658	4284	1984	2003	1089	1552	1826	1746	3259	27740	100.0%

[2312 Newcomers/Month]

1991	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total	Percent
Nov.	1713	1819	1734	2651	1801	1088	1662	872	679	1070	813	1270	17172	40.3%
Tech.	89	307	*882	3025	2858	2112	2932	3180	1680	3354	1815	2608	24842	58.2%
Other	14	36	40	73	55	31	82	69	48	77	59	62	646	1.5%
Total:	1816	2162	2656	5749	4714	3231	4676	4121	2407	4501	2687	3940	42660	100.0%

[3555 Newcomers/Month] [\*=First Codeless Tech license issued on March 12, 1991]

1992	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total	Percent
Nov.	655	1260	1364	1330	1066	1371	1024	465	617	456			9608	24.1%
Tech.	3318	2764	3347	3810	3058	4525	2752	2494	2069	1548			29685	74.4%
Other	57	68	95	75	54	61	67	44	46	31			598	1.5%
Total:	4030	4092	4806	5215	4178	5957	3843	3003	2732	2035			39891	100.0%

[3989 Newcomers/Month]

The FCC licensing statistics are not yet available for the months of November and December 1992, but it is anticipated that approximately 4,000 first time amateur operator licenses will be issued each month - perhaps more! This all depends on how well the FCC in Gettysburg is able to reduce their backlog.



## Licensing and Call Sign Changes Coming

The FCC hinted at the Annual VEC Conference held in June of some possible changes in the Commission's licensing and call sign assignment systems. Private Radio Bureau Chief Ralph Haller said that he was looking into a program called "auto grant" which would allow a 24-hour licensing turnaround through electronic filing of amateur applications. The goal is paperless communications with the FCC's licensing facility in Gettysburg, PA.

Present rules require the Commission to act on a signed license application. Newly approved FCC Authorization legislation will permit the FCC to issue a license without actually seeing an applicant's signature.

Haller also said a new computer system would be coming on-line and that software was being written that will permit the FCC to accommodate requests for special amateur call signs within the next three years "...although the target date is less."

Andrew Fishel, FCC Managing Director, confirmed in a November 25th letter that the commission is in the middle of an *Information Systems Modernization Program* and is studying *Electronic Data Interchange (EDI)*. A "redeveloped amateur licensing system" scheduled for implementation in the first quarter of 1994 will accommodate both paper and electronic filings from the Volunteer-Examiner Coordinators.

## Folding Novice exams into the VEC System

Last summer, the FCC proposed to discontinue the separate Novice license testing program and bring it under the VEC System which examines all other classes. That system has some 30,000 trained and accredited volunteer examiners (VE's) closely coordinated by 18 VE coordinators. Each examination for the Novice Class operator license is administered more informally by two amateur operators selected by the examinee.

The NPRM was a result of separate petitions submitted last February by the ARRL and W5YI-VEC. Actually the FCC had already been working on exactly such a proposal since the fall of 1991.

FCC records show the VEC System is superior. The VEC System screens all amateur radio Form 610 applications before submission to the FCC. Their error rate is less than one percent compared to 10 percent in the Novice testing program. The better performance of the VEC System is primarily due to improved communications between the FCC, VEC and volunteer examiners. No such channel of communication exists in the Novice testing program.

The FCC proposed to include the responsibility for the preparation and administration of Novice Class operator license examinations under the VEC System with the same conditions that apply to the four higher classes of license. These conditions include requiring each VE to be accredited by a VEC, three VE's needed to administer an examination, examination coordination by a VEC and issuance of a *Certificate of Successful Completion (CSCE)* to every examinee who scores a passing grade on an examination element. The FCC proposal also provides for expense reimbursement. Action on this matter is expected during the first quarter of 1993.

## Changes to Business Rule

In a 14-page letter dated January 6, 1992, the ARRL asked that modifications be made to Section §97.113 of the Rules to allow amateurs to more fully participate in public service activities. The League suggested expanding some business-related amateur radio operations and permitting communications which might be provided through other radio services as long as it was not conducted on a regular basis.

The commission treated the letter as a petition for rule making. On June 18th, the FCC released a long awaited *Notice of Proposed Rule Making* looking toward relaxing restrictions on business communications in the Amateur Service. The Commission used the ARRL's proposal as the basis for their NPRM. In fact, it was almost verbatim.

Among other things, the proposal, if adopted, would allow paid teachers to use amateur radio in the class room, permit amateurs to provide infrequent voluntary public service communications (even when there is a financial benefit to those assisted) ...and to use amateur radio frequencies for personal business communications such as ordering food or making reservations.

The new rules might even go as far as to allow ham operators to participate in any type of communications as long as the amateurs involved do not sell the service to sponsors and benefactors. Compensation to operators would be allowed only in the case of Morse code practice, information bulletins and classroom instruction.

Public comments, however, suggested that the matter is very complicated and many issues were raised. The FCC is now digesting everyone's views. It is anticipated that the amended "no business" amateur radio communications regulations will be released sometime around mid-year 1993. The new government guidelines are certain to increase the importance and value of amateur radio to everyone.



## 1992 World Administrative Radio Conference

Representatives from 164 nations met in Spain last February to consider high frequency broadcasting and new space radio services such as high definition television, low Earth orbiting satellites, satellite sound broadcasting and new mobile satellite services. Amateur radio matters were not on the agenda, but our frequencies could have been affected since spectrum had to be found to accommodate the new services. Particularly at risk were our Amateur Satellite Service frequencies.

Fortunately, WARC-92 had very little impact on amateur spectrum. One of the major results, however, was the adoption of a resolution stating that it was desirable for the Amateur and International Broadcasting Services to have exclusive (rather than shared) allocations at 40 meters. The resolution agreed that a future WARC should consider realigning the 7-MHz Amateur Service allocations.

## FCC Rejects Ham Spectrum Protection

Even though Vice President Al Gore is one of its sponsors, almost assuredly, HR-73 - the *Amateur Radio Spectrum Protection Act*, isn't going anywhere. The bill, which has dozens of Congressional co-sponsors, would prevent the FCC from diminishing amateur frequencies without providing equivalent replacement spectrum.

The FCC is opposing the legislation and says the bill would restrict their future capability to react to changing requirements. They conclude "The effectiveness of the Commission's spectrum management policy depends on its ability to amend the table of frequency allocations when public interest and the nation's telecommunications needs require revisions of spectrum use."

"Further, the Commission needs flexibility to respond in the best interest of the United States in international spectrum allocation matters to meet future requirements." The FCC also believes enactment of the bill will set a bad precedent since it would encourage other radio services to also ask Congress for similar spectrum protective legislation.

## Focus on RFI Shifted to Cause

Early in the year, the FCC began redirecting its focus on radio frequency interference handling from investigating individual complaints to working with electronics manufacturers and exploring possible future regulatory action. While not completely discontinuing RFI investigation, consumers are now being urged by

the FCC to seek help from manufacturers of the appliance receiving interference.

The *Communications Act* was amended several years ago to give the FCC authority to establish standards for RFI immunity for home electronic products. It has never used this authority. The Commission believes it is using too much of its resources to send out staff to look at individual problems rather than let cable, telephone, and appliance firms first try to correct the problem.

The FCC also hinted that it might decide to require RFI immune products because it is being asked to solve more interference problems with less resources and that voluntary efforts by electrical groups continue at a "snail's pace." It also noted new regulations in force throughout the European community require electronic products to demonstrate an adequate level of electromagnetic immunity from outside interference.

## FCC Cracks Down on Freebanders

Last March, engineers from all FCC field offices fanned out across the nation in an enforcement campaign targeting the illegal radio operation that takes place between CB Channel 40 and the bottom of the 10-meter ham band. More than 60 "freebanders" were identified, fined and shut down.

The amount of all FCC administrative fines have been increased to coincide with a new fee schedule. Penalties are now commonly in the \$2,000 to \$10,000 area bracket.

## Licensing of Visiting Foreign Amateurs

There are currently two ways that foreign ham operators may be licensed to operate their equipment in the United States. One is to obtain a regular ten-year term amateur radio operators license by passing the required FCC examinations. While FCC examination opportunities are available in a few foreign countries, most visiting amateurs would have to take the tests after they arrived in the US. This is not workable since it normally takes up to two months to receive a license from the FCC. Most foreign amateurs visit the United States for only a short period of time.

Second, citizens of the 76 countries whose governments have signed reciprocal operating agreements with the United States may, on the basis of the amateur service licenses issued by their own countries, be issued one-year permits to operate amateur stations while in this country. The FCC currently issues more than 2,000 reciprocal permits annually. Many visiting foreign hams are ineligible for a



# W5YI REPORT

Nation's Oldest Ham Radio Newsletter

Page #5

January 1, 1993

reciprocal permit, however, because there is no reciprocal agreement between our government and theirs.

The FCC proposed a third way which is being termed a temporary visiting amateur operator's license. Foreign amateurs could complete the whole process during one quick visit to a VEC coordinated exam session, either before or during the visit.

Teams of accredited Extra Class volunteer examiners would (1.) review identification, (2.) inspect the foreign amateur's license to be certain it is current and; (3.) determine the extent of the operating privileges. The VEs would accept the foreign license as proof of qualification in eight of the nine operational and technical topics contained in the question pools. The topic that is not covered by a foreign license is the Part 97 Rules.

The VE team would then administer a 20 question test, Element 5. The questions would be taken from the "Rules" sub-element in each of the existing question pools. There are about 400 Rules questions in these pools. The minimum passing score would be 18 questions answered correctly. If a foreign amateur passes the examination, the VE's would make a record of the examination and issue a *Certificate of Successful Completion of Examination*.

This CSCE would authorize amateur operating privileges in the United States for up to a 60 day period which could begin immediately. VEs would also be available to answer any questions that the foreign amateur might have concerning operating his equipment while in this country. The coordinating VEC would maintain a data base of temporary visiting amateurs which would be made available to the FCC on a regular basis.

The beginning and ending date of the single 60-day period would be indicated on the CSCE. Operating privileges would be those authorized by the foreign operator's own license that does not to exceed those of a U.S. Amateur Extra Class operator. The visiting foreign amateur would identify his station by prefixing his call sign with the letter "W" followed by the station's U.S. numerical area location. The ARRL is on record as opposing the measure.

## Ham Radio Flies on Two Shuttle Missions

A total of six astronaut ham operators orbited during Space shuttle missions STS-45 and STS-47. All operated amateur radio extensively during their flights both individually - and in conjunction with schools! Each of these missions also had a foreign amateur on board. Belgian amateur Dirk Frimout, ON1AFD blasted off aboard Atlantis on March 23rd and Japanese amateur Mamoru Mohri, 7L2NJY was part of September's

Endeavour crew. Both were scientific missions.

SAREX, NASA's Shuttle Amateur Radio Experiment, is designed to demonstrate the feasibility of amateur shortwave contacts between the Space Shuttle and ground amateur radio operators. SAREX also serves as an educational opportunity for schools.

Three SAREX missions are scheduled for 1993 beginning with STS-55 in February. STS-56 follows in March and STS-57 in late April.

## HF Packet Forwarding Dispute Settled

It was decided at the July 1992 ARRL Board Meeting to replace the five-year STA (*Special Temporary Authority*) which allowed an experimental system of fully automated HF packet stations with semi-automatic forwarding. That meant that an on-line control operator would check the frequency before transmitting to reduce the potential that automatic HF stations would interfere with ongoing communications.

There was no question, however, that the STA participants demonstrated that HF packet is a viable medium through which data can be successfully moved. The move to semi-automatic forwarding caused a major ripple of discontent among the backers of HF packet. They maintained that it would effectively kill the mode.

A meeting between the HF packeteers and the ARRL's Digital Committee was scheduled for late September in Dallas to determine if an acceptable alternative could be reached. Before the meeting could be held, however, a voluntary digital band plan was hammered out on September 4th at the IARU Region 2 meeting held in Curacao, Netherlands Antilles.

The new international digital band plan calls for HF digital segments between 3580-3635 kHz, 7035-7050 kHz, 10.130-10.150 MHz, 14.070-14.112 MHz, 18.100-18.110 MHz, 21.070-21.125 MHz, 24.920-24.930 MHz and 28.070-28.189 MHz. 7100-7120 kHz was also selected for HF packet operations within Region 2. The U.S. delegation objected to the 40 meter digital band segments because it affected CW and Novice operations.

On Sept. 26th, the ARRL Digital Committee met with five representatives of the present HF automatic-forwarding STA networks to discuss continuing the existing operational forwarding networks while protecting the interests of other users of the bands. The adoption by the IARU Region 2 meeting of the digital band plan opened the door to reconsideration by the ARRL Digital Committee. The end result is that the ARRL Digital Committee will now ask that the ARRL's Board of Directors petition the FCC to incorporate the Region 2 digital band plan into the US regulations.



# W5YI REPORT

Nation's Oldest Ham Radio Newsletter

Page #6

January 1, 1993

## New privileges proposed for Novices

In response to three petitions, the FCC issued a *Notice of Proposed Rule Making* (NPRM) in December which created a small new subband at 222.0 to 222.15 MHz where repeaters are prohibited, authorized frequency privileges to the Novices in the entire 222-225 MHz band; and allows Novice Class operators to be licensees and control operators of repeaters in the 222-225 MHz and 1270-1295 MHz segment of the 1240-1300 MHz band. Interested parties may file comments on or before February 23, 1993, and reply comments on or before March 23, 1993. What is in store for next year?

## Privatizing the Commercial Radio Operator Exam

This proceeding looks toward turning the administration of commercial radio operator examinations over to the private sector. The FCC asked for and obtained legislation in 1990 (Public Law 101-396) permitting the Commission to utilize persons believed qualified to prepare and administer commercial radio operator license examinations.

The background of this proceeding is identical to the 1983 proposal to privatize administration of amateur radio operator examinations. President Reagan signed the *Communications Amendments Act of 1982* into law on September 13, 1982. Public Law 97-259 contained an amendment which permitted volunteers to prepare and administer amateur radio license examinations.

## New Novice and Technician Pools Released

The VECs *Question Pool Committee* (QPC) completed work on newly revised Element 2 and 3(A) Question Pools and placed them in the public domain on December 1, 1992. These two elements make up the sole requirement for the Codeless Technician examination. Every question has been revised in some way or other.

An ASCII text computer disk and a hard-copy booklet with the new questions, multiple choices and answers identified have been forwarded to all known license preparation publishers and VECs. (You may also purchase a copy of both the disk and booklet for \$5.00 postpaid from: *The W5YI Group, P.O. Box 565101, Dallas, TX 75356*. Credit card orders go toll free to: 1-800-669-9594).

The new questions will begin showing up in examinations after June 30, 1993. The new pools have approximately 10% less questions than the current questions.

## OCTOBER VE PROGRAM STATISTICS

<u>October</u> <u>No. VEC's</u>	<u>1990</u> <u>*18</u>	<u>1991</u> <u>*18</u>	<u>1992</u> <u>*18</u>
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<u>Testing Sessions</u>	<u>536</u>	<u>839</u>	<u>918</u>
<u>VEC</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>
ARRL	36.0%	44.6%	53.8%
W5YI	45.0	37.5	32.9
CAVEC	4.1	4.6	2.9
WCARS	2.4	2.5	2.6
LARC	0.9	1.0	1.4
GtLks	3.5	4.3	0.9
Others (12)	8.1	5.5	5.2
<u>Year-to-Date Sessions</u>	<u>5014</u>	<u>6563</u>	<u>8283</u>

<u>Elements Administ.</u>	<u>8206</u>	<u>16972</u>	<u>15468</u>
<u>VEC</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>
ARRL	40.0%	49.1%	58.4%
W5YI	39.1	31.1	26.8
WCARS	1.8	2.7	4.0
LARC	1.5	2.8	2.7
CAVEC	5.0	3.9	2.0
GtLks	4.8	3.6	0.5
Others (12)	7.8	6.8	5.6
<u>Year-to-Date Elements</u>	<u>86758</u>	<u>140850</u>	<u>162624</u>

<u>Applicants Tested</u>	<u>5132</u>	<u>10251</u>	<u>9351</u>
<u>VEC</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>
ARRL	39.8%	48.3%	58.1%
W5YI	39.4	31.4	27.3
WCARS	1.9	2.7	4.1
LARC	1.5	2.7	2.4
CAVEC	4.2	3.6	1.9
GtLks	5.4	4.6	0.7
Others (12)	7.8	6.7	5.5
<u>Year-to-Date Tested</u>	<u>53048</u>	<u>84745</u>	<u>97549</u>

<u>October</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>
Pass Rate - All	60.5%	67.5%	63.7%
Applicants/Session	9.6	12.2	10.2
Elements/Applicant	1.6	1.7	1.7
Sessions Per VEC	29.8	46.6	51.0

## Administrative Errors by VE's/VEC's

<u>October</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>
Defect. Applications	1.0%	0.7%	0.0%
Late Filed Sessions	1.5%	1.5%	0.8%
Defective Reports	0.6%	0.4%	0.0%

(\*) **Note:** There have been approximately 15% more applicants tested and exam elements administered - and 26.2% more test sessions this year vs. 1991.

[Source: *Personal Radio Branch/FCC; Washington, D.C.*]



## Telecommunications Technology Update!

### WORLD'S LARGEST ANTENNA

Talk about stacking your antennas. The largest array of antennas in the world is about to come on-line, stretching over one half of the earth. Ten radio dish antennas, each 82 feet across and nearly 100 feet tall, will stretch from Hawaii, across the continental United States, to the Virgin Islands. The array will be used to study radio signals coming to us from distant galaxies, providing unprecedented resolution. The secret lies not only in such a large collection plate for radio signals, but also a superfast computer capable of sorting all the data coming in from all ten antennas and piecing it all together into a single image. This entire project is called VLBA short for *Very Long Baseline Array*.

Curiously, the data is not sorted out in real time. Due to the tremendous amounts of information, each radio telescope will record what it hears onto tape. Each tape recorder stamps an atomic clock's time stamp onto the record as well, so all records can be synchronized by the master computer when they arrive.

### AUTOTALK TRAFFIC REPORTS

Some TV stations use SAP (*Secondary Audio Program*) to simulcast video transmissions with the soundtrack in another language, or whatever other audio they want. But not many stations make use of SAP because of difficulty in viewers' knowing how to use it (ask any TV repair shop how many customers read the manual!).

A company named Autotalk wants to share the unused SAP channels to help motorists avoid traffic jams. Their idea is to set aside one SAP channel in a city for use by Autotalk; much like the NOAA's Weather Radio service in

which a prerecorded message is updated regularly, Autotalk consistently updates information on local traffic conditions. A special adaptor attaches to your car radio so you can listen while you drive; while you're still at home, you can listen to the traffic report before you leave.

The advantage to all this is that traffic reports make up most of the programming time, so drivers find out what's happening on the roads almost immediately, instead of waiting for a commercial radio station's programmers to announce road conditions every 15 minutes, and only during rush hour.

### POWER SUPPLY EFFICIENCY

One reason for radios and computers getting increasingly smaller is advancement in power-supply design. Novice hams know about linear DC power supplies, in which AC is stepped down through a transformer, rectified with diodes, and smoothed into DC by large filter capacitors. Linear power supplies produce a lot of heat, and are not very efficient. Furthermore, for high-power circuits, the size of the transformer can be immense. The limiting factor in this is the operating frequency of the incoming AC voltage: 60 Hz. If that frequency is made to go higher, the efficiency increases and the physical size of the transformer shrinks. This is the main reason why aircraft systems use 400 Hz; it saves weight.

But why stop there? Some designers have built power supplies that pack 20 watts per cubic inch by operating at 450 kHz, and some go up to 1 MHz. Electrolytic capacitors are useless at these frequencies, and are replaced with small ceramic capacitors.

One problem with these switch-mode power supplies is the RFI they produce. The metal case is

supposed to act as both a heat sink and as a Faraday cage to keep RF in and out. This is why it is a good idea to keep all the screws intact on a PC's power supply.

If increasing the operating frequency increases the efficiency, just how efficient can these power supplies get? Expect 92% efficiencies within the next five to 10 years.

### FIBER-OPTIC SECURITY SYSTEM

Technology in the security field must upgrade with the times. One of the latest advances in home and business protection uses fiber-optic cables buried in the ground or mounted in the floor.

A characteristic pattern is sent through the cable, and is monitored at the other end. As long as nothing disturbs that pattern, there is no cause for alarm. But if someone steps into the area surrounded by the buried cable, the weight of his or her body slightly compresses the ground just enough to alter the pattern of light in the optical cable.

Software can control how sensitive the alarm can be, so small animals in a house can be ignored by the system.

### LITTLE KNOWN FCC DATABASE

The FCC operates a computer bulletin board (BBS) open to all. Running at 300-1200 baud, the number is (301) 725-1072. It provides many features, including a database that holds records on manufacturers and the equipment they submit for approval to the FCC. Because many electronic devices are potential RF transmitters, they must be submitted to and approved by the FCC. Each unit is issued a number. Many electronic technicians use this FCC ID number to track down the manufacturer



# W5YI REPORT

Nation's Oldest Ham Radio Newsletter

Page #8

January 1, 1993

of a certain product. Also available on-line are public bulletins, operational information on the laboratory, information on how to apply for equipment authorization, and latest rulemakings. The BBS allows each user six minutes per call.

## **RUSSIA ORBITS U.S. SATELLITES**

Russia is offering their satellite expertise to several companies around the world. They can build, test, and launch one in less than one year, three times faster than can currently be done here.

Russia recently sold two of their telecommunications satellites to an Indiana firm called Rimsat Ltd, who wants to eventually set up a constellation of satellites over the Pacific Rim. The two satellites originally were over Russia, but were to be moved in their proper orbits by the end of 1992.

Rimsat's goal is seven "birds," for a total of 69 transponders and over 80,000 lines for telephone links. Russia, for their price, will launch even more satellites if needed, and they will construct and launch them; they will even maintain them for up to seven years.

Why is Russia doing this? They need the money. They expect to receive \$150 million for the first seven satellites.

## **KEEPING THAT PC OPERATING!**

How many times has your personal computer gone down during a storm? How often has your system suffered a hard disk crash? Has your PC ever called it quits on its own?

Some users want computers that are fault-tolerant. That is, machines that can pick up where they left off before the fault without the loss of any data. There are several ways to make a computer "bullet-proof." One is redundancy: each and every component has a

backup. Another method is to provide such a safe environment that glitches aren't allowed to get in.

The enemies of computers are physical shocks, which can damage a hard drive; heat, which damage electronic components; dust, which is attracted by the power supply's fan and settles everywhere internally; vibration, which causes the system to resonate and physically destroy delicate mechanical alignments; and moisture, which condenses and plays havoc with close-pin circuits.

Curiously, the day-to-day operation of turning a computer on and off results in socketed chips "walking" out of their sockets, resulting in bizarre computer behavior. Tiny deposits of corrosion settle in connectors, creating plenty of extra headaches. Or sometimes a user will accidentally stumble across a certain pattern of keys that, when pressed, causes some freak command string in the software and forces the machine into a loop from which it cannot escape without turning it off. (Some HF radios use a specific sequence of key presses to reset their internal memories!)

It must be noted that integrated circuits produced in massive quantities are most reliable. Fortunately, most chips in PCs are mass-produced.

## **GETTING A GOOD "GROUND"!**

Let's say you have just moved in to a new house in another state. Houses are few and far between, your new neighbors don't mind your setting up a tower in your backyard, and no one has any TV complaints because you're a ham. Everything's just fine ...until you realize that the ground is extremely rocky and the soil conductivity is almost negligible.

Driving an ordinary ground rod into the earth will not only be a headache, but its not effective. So how do you get a better ground?

One company, Erico Products Inc., claims its product will do the trick. Cadweld Ground-Enhanced Material is a powder that is added to the soil around ground rods to increase the conductivity of the soil. It doesn't corrode like salt does, or wash away with the ground water.

Telephone companies are already using this material and so are electric companies. There's only one drawback to it, though. You still have to drill the hole.

## **AM STEREO RADIO STANDARD!**

Congress has forced the FCC to do something they historically have been reluctant to do! That is to dictate to the business community which technology they should pursue. But they had no choice!

The *Telecommunications Authorization Act of 1992* ordered the FCC to determine and adopt a single AM radio stereophonic transmitting equipment standard.

AM stereo has been around for some ten years. The FCC's position on the adoption of standards has always been to allow market forces to determine the course of technology. It noted, however, that the original five AM stereo radio systems had now narrowed to just the Motorola C-Quam and the Kahn systems.

The FCC acknowledged that the Motorola C-Quam process is used by 90% of the 660 AM radio stations with stereo capability and that there were approximately 24 million C-Quam receivers currently in use. (Canada and Mexico have already adopted the technology as their national standard.)

The FCC said they will be directing radio stations using alternative systems to discontinue them as of one year from the effective date of the rules. The commission also will be requiring Motorola to license its patents to other parties under fair and reasonable terms. Comments are due on April 5.



# W5YI REPORT

Nation's Oldest Ham Radio Newsletter

Page #9

January 1, 1993

• Loan copy of **AMSAT's new Phase IIID Satellite** 10-minute video is available free of charge from **Phase IID Video, P.O. Box 406, Glenview, IL 60025**. Video is co-hosted by Barry Goldwater, K7UGA, Joe Schroeder W9JUV and Roy Neal, K6DUE.

• **Spanish language intruders! Illegal voice operation** on the low end of 10-meters (between 28.000 and 28.100 MHz) continues to be a problem.

• President Bush has signed legislation into **law blocking the sale of any radio equipment used to eaves drop on cellular telephone calls** between 870 and 894 MHz.

The legislation signed October 28th reads:

(1.) Within 180 days after the date of enactment of this [law], the [Federal Communications] Commission shall prescribe and make effective regulations denying equipment authorization ...for any scanning receiver that is capable of:

- (a.) receiving transmissions in the frequencies allocated to the domestic cellular radio telecommunications service,
- (b.) readily being altered by the user to receive transmissions in such frequencies or;
- (c.) being equipped with decoders that convert digital cellular transmissions to analog voice radio.

(2.) Beginning 1 year after the effective date of the regulations adopted pursuant to paragraph (1), no receiver having the capabilities described in subparagraph (a), (b) or (c) of paragraph 1, as such capabilities are defined in such regulations, shall be manufactured in the United States or imported for use in the United States.

The big question is, of course, what about the estimated 10 million cellular-capable scanners already in the hands of snoopers?

• The **Ft. Lauderdale Sun-Sentinel** newspaper (Dec. 1, page 6A) reports that Rep. Robert Torricelli is drafting **legislation to reserve a portion of the short wave HF band for two way communications with Cuba** because Cubans residing in the United States are unable to telephone families in Cuba.

• **BY1QH News** is a bi-weekly newsletter published by "Rick Hunter" via APLINK packet BBS (through JA5TX.JPN.AS) to the world's hams.

Rick is a 20 year old engineering student at Tsinghua University in Beijing, Peoples Republic of China. BY1QH is their ham club call sign. His Chinese name is Niu Xiaopeng and the newsletter is very chatty. Here is a sample:

"BY1PK, the amateur station of **China Radio Sports Association (CRSA)** is the very first ham radio station in the Peoples Republic. Founded in November 1958, it was closed in 1966 and reopened on March 29, 1982. BY1PK is now so well equipped that it is undoubtedly a first rate world-class radio station.

VE7BC and JARL have helped a lot in making CW, SSB, RTTY, SSTV, FAX, FM, satellite, packet, AMTOR, etc., available at BY1PK. In addition, a 2-meter repeater has just been installed. The current president of BY1PK is Mr. Tong Xiaoyong, BZ1AA, who was invited by ARRL to the United States for a friendly visit in 1988."

"Rick Hunter" said his address is Tsinghua University, Room 316, Building 25, Beijing 100084, Peoples Republic of China. He also may be contacted through George, VE7CIZ whose packet address is: VE7CIZ @VE7CIZ.#VANC.BC.CAN.NA.

Rick said they are in need of a 2SC2652 transistor "...for healing our IC-2KL amplifier." Apparently none are available in the Peoples Republic of China.

• I have no idea who the **National Alliance of Codefree Radio Amateurs** is, but they are reportedly going to petition the FCC; demanding that the HF phone bands be made available for use by no-code Technician Class amateurs. [I think they better work on the international radio law first which requires telegraphy knowledge when amateur radio operation takes place below 30 MHz.]

• Noted DXer **John Dorr, K1AR**, has left Wang Laboratories and has **joined the full time business staff at CQ Communications**. Dorr's new title is Assistant to the President (who is Richard Ross, K2MGA.) He was a marketing manager with Wang and his duties with CQ will be essentially in the same area.

• **Hams at the ARRL in Newton, CT, have "adopted" an Explorer troop**. Explorers are the highest rank in the Boys Scouts of America. The co-educational group includes members in the 14 to 20 year old age group. The League plans to help the Explorers with a variety of electronics projects, and possible develop classes leading toward Amateur Radio licenses.

• Cute poem making the rounds: **THE SPELLING CHECKER**

(by Cindy Speer)

I have a spelling checker,  
It came with my PC.  
It plainly marks four my revue  
Mistakes eye can knot sea.  
Iran this poem threw it.  
I'm sure your pleased too no  
Its letter perfect inn it's weigh,  
My checker tolled mi sew!

• Interesting! **"Prodigy," the one million strong commercial information service**, does not allow users of its **Ham Radio Hobby Bulletin Board** to post a price for equipment they wish to swap/sell/trade.



# W5YI REPORT

Nation's Oldest Ham Radio Newsletter

Page #10

January 1, 1993

● **Allen Burton, KA4URC of Hornbeak, Tennessee has had his \$2,000 fine reduced to \$200.** (See W5YI Report, Oct. 1, 1992) On June 29, Burton was monitored on 14.300 MHz using words that the FCC considered indecent "...within the meaning of Section §97.113(d) and prevailing Supreme Court and Commission precedent."

Burton apologized for the questionable transmission and stated that he could not afford to pay the \$2,000. The *Communications Act of 1934* directs the FCC to consider ability to pay when assessing monetary penalties and reduced the fine. Burton was directed to remit \$200 by December 23rd.

● Remember the story we did on the **saga of the German DARC** (*Deutsche Amateur Radio Club*, the official representative to the IARU) and the German telecommunications authorities (*Deutsche Bundespost*.) See W5YI Report, Nov. 15) It seems that the government wanted to deregulate German ham radio and turn over all rule making to the DARC. Their officers were a little remiss in letting their Board know about it and were forced to resign.

The DARC board of directors has now appointed **Dr. Horst Ellgering, DL9MH**, as president and **Dr. Jodi Elbers, DJ3XV** and **Rolf Kadam, DJ7CH** as vice presidents until regular elections are held in May.

● **Somalian T5 prefix** amateur stations associated with **Operation Restore Hope** have been reported on the air using 10, 15 and 20 meters.

● One of our readers asked if it is **legal for amateurs to work non-amateurs on 902-928 MHz** where unlicensed Part 15 low-power communications is authorized. The answer is "No" and "Yes!" The

Amateur Rules - Section §97.111(a) - forbids routine operations with non-amateur stations but the communications could take place **under Part 15 Rules.** (See Part §15.249 for the parameters.) Field strength is limited to 50 millivolts/-meter at a distance of 3 meters.

There certainly would not be a rules violation if the amateur used his/her ham call sign. Has this ever been done? Unlicensed low power Part 15 operation is also authorized on 13-cm, 5-cm and 1.2-cm - all of which are "combination" ham/ISM bands.

● **FCC Chairman Al Sikes said he will step down as of Jan. 19, 1993** - the day before the new Democratic administration takes office. The big question is who will be the FCC chairman. We have heard all sorts of names mentioned including present Commissioners James Quello and Ervin Duggan. While supposedly an independent agency, the FCC chairman usually adopts the agenda of the administration. What direction the Clinton administration take on amateur radio is anyone's guess. One thing for sure, ham radio has never been a high priority item at the commission. Commissioner Sherrie Marshall will also be replaced since Pres. Bush did not re-appoint her.

● VE3BZE tells in the December *Canadian Amateur Magazine* **how to build an invisible 2-element 20-meter beam for under \$5!** You merely place two (14 gauge) wire antenna elements on either side of your slanted rooftop (15-ft 3-in. apart for .22 spacing) and hook the feedline to the 33-ft driven element. (Reflector is 34-ft 9½-in. long.) Beam resonates at 14.150 MHz. A multiple of half wave 52-ohm feedline is run into the shack.

● **The North Texas Balloon**

**Launch scheduled for Dec. 12th was scrubbed** due to bad weather. The low ceiling and poor visibility was below FAA guidelines. A new attempt has now been scheduled for Jan. 9th.

Temperature and altitude telemetry will be fed back on 2 meter FM (144.29) and 10-meter AM (28.322) A reception report net is set to begin on 40 meters (7155 kHz) at the 1500 UTC launch time and should last throughout the day. Flight updates will also be given on 7155.

● It looks like it will be next summer before the **Canadian Radio Relay League (CRRL)** and **Canadian Amateur Radio Federation (CARF)** are formed into a single national organization - RAC, **Radio Amateurs of Canada.** The legal and financial process is going slower than planned.

● Both national Canadian ham organizations (CRRL and CARF) are concerned about **local cities and municipalities enacting antenna and tower installation laws** - even though the *Radio-communications Act* gives the Canadian government regulatory control over radio antennas. They have established an **Antenna Bylaw Watch** and are encouraging amateurs to send local antenna laws to: Earle Smith, VE6NM, P.O. Box 412, Grande Prairie, Alberta, Canada, T8V 3A5

● 21st Annual ARRL **Straight Key Night** begins at 0000Z on New Year's Eve and continues through the day on 20, 40 and 80-meters. Use SKN instead of RST. No rules, no scoring, no log. Call "CQ SKN."

● **Radioscan Magazine has a new name!** As of the Jan. 1993 issue, they are now **Amateur Communications.** (8250 NW 27 St. #301, Miami, FL 33122. Tel. 305/594-7735.)